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EXAMINER	
HECK, MICHAEL C	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/610,704	KILGER ET AL.	
	Examiner	Art Unit	
	Michael C. Heck	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18 January 2005 has been entered.

2. The following is a First Office Action in response to the request for continued examination filed 18 January 2005. Applicant amended claims 1-11 and 13-15, and added new claims 17-42. Claims 1-42 are pending in this application and have been examined on the merits as discussed below.

Response to Arguments

3. Applicant's arguments with respect to claims 1-42 have been considered but are moot in view of the new grounds of rejection. Please see the 35 U.S.C. 112 and 101 rejections below.

Specification

4. The disclosure is objected to because of the following informalities:

- On page 13, line 12, delete "it is possible to the use the quantitative variables", and insert -- it is possible to use the quantitative variables --.

- On page 14, line 20, delete "at the same member for a particular number times in", and insert -- at the same member for a particular number ***of*** times in --.

The above citation is a mere guide. Applicant is requested to review the specification thoroughly to eliminate additional errors. Appropriate correction is required.

Claim Objections

5. **Claim 19** is objected to because of the following informalities: Claim 19 claims dependency to itself. It appears the claim should read "The method of claim 17" and has been interpreted as such for examination purposes. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 1-16, 20-23, 33 and 35** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. As to **claims 1 and 9**, the applicant amended independent claims 1 and 9 to indicate the one or more

quantitative variables are common to each database of the plurality of disparate databases, however the specification reads that at least one qualitative variable which is common to each database is identified, and then transformed into one or more quantitative variables (pp. 4, lines 15-17). As understood by the Examiner, the feature of linking disparate databases by the common qualitative link allows the quantitative variables to be combined or "bloomed" to widen the narrow base of connectivity between the two databases. That is, each disparate database has quantitative data that describes the qualitative characteristic of the data. Since the qualitative data matches, then the inference is the quantitative data can be combined to give a better quantitative representation of the qualitative characteristics, which can then be translated back to the combined database for a more comprehensive data mining analysis. Claims 1 and 9 prior to the amendment stated the qualitative variable is common to each database and the information stored in each databases is converted in terms of the one or more quantitative variables where an integrated database is formed for predicting consumer behavior by combining the converted information.

As to **claims 20 and 33**, the applicant identifies support for the new claims to be found on page 12-13 of the specification with reference to figures 3 and 4. However, starting on page 11 of the specification the applicants specifically indicate that "In step 200, "qualitative variables" are matched by identifying the same or similar members in the two databases 25, 35 (e.g., the MasterCard database and the Simmons database) and by forming a logical link between the databases 25, 35, 45." On page 12 of the specification, the applicant further indicates that "In step 210, the identified members

are transformed using a "blooming" procedure to form "quantitative variables". For example, the blooming procedure according to the present invention may transform a qualitative variable (e.g., "I shopped at Macy's") into a quantitative variable (e.g., "I shopped at a store where the mean number of transactions per customer was 10.2, the mean transaction amount per purchase was $28.12"), and may utilize current information and/or historical information for the particular member." In addition, the applicant explains that "Instead of relying on a qualitative variable which is based on the presence or absence of shopping or purchasing behavior at a specific merchant, by utilizing the blooming variables, it is possible to use the quantitative variables so that the databases are associated and/or interconnected with multiple, substantively interpretable indicators which possess a higher level of measurement". Again, as understood by the Examiner, the feature of linking disparate databases by the common qualitative link allows the quantitative variables to be combined or "bloomed" to widen the narrow base of connectivity between the two databases.

The same rejection as stated above for claims 1, 9, 20 and 33 applies to **claims 2-8, 10-16, 21-22 and 35**.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claim 34 and 36** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 34 recites the limitation "the plurality of

quantitative variables" in lines 2. There is insufficient antecedent basis for this limitation in the claim. Independent claim 30 identifies "a plurality of variables" and claim 33 indicates "determining the plurality of variables by selecting at least one qualitative variable from each database of the plurality of disparate databases; and transforming the at least one qualitative variable for each database to a plurality of quantitative variables". The Examiner interprets claim 34 to be dependent to claim 33 and has examined the application accordingly. The same rejection for claim 34 applies to claim 36 since claim 36 is dependent to claim 34. Also, please see the 35 U.S.C. 112, first paragraph, rejection above.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-8 and 17-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts; and

(2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as

opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For the process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts. In the present case, **claim 1** only recites an abstract idea. As to **claim 1**, the recited steps of identifying at least one qualitative variable for each database of the plurality of disparate databases; transforming the at least one qualitative variable into one or more quantitative variables, wherein the one or more quantitative variables are common to each database of the plurality of disparate databases; converting a portion of the information stored in each database of the plurality of disparate databases according to the one or more quantitative variables to form corresponding converted information; linking the plurality of disparate databases based upon data of the corresponding converted information to form an integrated database; and creating a behavioral model from the integrated database using data from each database of the plurality of disparate databases does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The method only constitutes an idea for integrating and modeling information stored in a plurality of disparate databases, therefore, is deemed to be directed to non-statutory subject matter. As to **claim 17**, the recited steps of determining a plurality of variables from each database, and converting the plurality of variables to form a plurality of statistical drivers, the plurality of statistical drivers common to each database of the plurality of disparate databases; linking the information stored in the plurality of disparate databases based upon corresponding data of the plurality of statistical drivers;

performing a first cluster analysis using the information stored in each database of the plurality of disparate databases to create a plurality of simultaneous cluster solutions across all databases of the plurality of disparate databases; and validating at least one simultaneous cluster solution of the plurality of simultaneous cluster solutions as a discriminatory behavioral model does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The method only constitutes an idea for creating a behavioral model from information stored in a plurality of disparate databases, therefore, is deemed to be directed to non-statutory subject matter.

As to technological arts recited in the preamble, mere recitation in the preamble (i.e., intended or field of use) or mere implications of employing a machine or article of manufacture to perform some or all of the recited steps does not confer statutory subject matter to an otherwise abstract idea unless there is positive recitation in the claim as a whole to breathe life and meaning into the preamble. In the present case, none of the recited steps are directed to anything in the technological arts as explained above. Looking at the claim as a whole, nothing in the body of the claim recites any structure or functionality to suggest that a computer performs the recited steps. Therefore, the preamble is taken to merely recite a field of use.

Additionally, for a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result. In the present case, the claimed invention produces a behavior model (i.e., repeatable) by integrating information stored in a plurality of disparate databases (i.e., useful and tangible).

Looking at the claims as a whole, nothing in the body of the claims recite any structure or functionality to suggest that a computer performs a task. While claim 1 and 17 recite disparate databases, this amounts to only stored information where nothing is done (i.e., computing) to breathe life into the invention.

Although the recited process produces a useful, concrete, and tangible result, since the claimed invention, as a whole, is not within the technological arts as explained above, the same rejection as stated above for claim 1 and 17 applies to **claims 2-8 and 18-29,** respectively.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claims 1-3, 9-11, 17-22, 26-27, 30-35 and 39-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta (Gupta, An Introduction to Data Warehousing, System Services Corporation, August 1997 [GOOGLE]) in view of Apté (Apté, Data Mining – An Industrial Research Perspective, IEEE Computational Science and Engineering, April-June 1997 [GOOGLE]). Gupta discloses a process and system for integrating information from disparate databases for purposes of predicting consumer behavior comprising:

- **[Claim 1]** identifying at least one qualitative variable for each database of the plurality of disparate databases (Para 2.1.1, 2.2.2 and 2.3.1, Gupta teaches data warehouses are most successful when data can be combined from more than one operational system. The data warehouse may effectively combine data from multiple source applications such as sales, marketing, finance, and production. A data warehouse logical model aligns with the business structure rather that the data model of any particular application. The entities defined and maintained in the data warehouse parallel the actual business entities such as customers, products, orders, and distributors. The terms and names used in the operational system are transformed into uniform standard business terms by the data warehouse transformation processes.);

- transforming the at least one qualitative variable into one or more quantitative variables, wherein the one or more quantitative variables are common to each database of the plurality of disparate databases (Para 2.1.1 and 2.3, Gupta teaches physical transformation includes the use of easy-to-understand business terms, and standard values for the data. Nearly all data in a typical data warehouse is built around the time dimension. The time dimension in the data warehouse also serves as a fundamental cross-reference attribute.);

- converting a portion of the information stored in each database of the plurality of disparate databases according to the one or more quantitative variables to form corresponding converted information (Para 2.4, Gupta teaches another attribute of today's data warehouses is the predefined and automatically generated summary views.);

- linking the plurality of disparate databases based upon data of the corresponding converted information to form an integrated database (Para 3.5, Gupta teaches a data warehouse may feed data to other data warehouses or smaller data warehouses called data marts.); and

Gupta fails to teach creating a behavioral model from the integrated database using data from each database of the plurality of disparate databases. Apté teaches the data analysis algorithms (or data mining algorithms, as they are more popularly known nowadays) can be divided into three major categories based upon the nature of their information extraction. These categories are as follows: predictive modeling (aka classification or supervised learning), clustering (aka segmentation or unsupervised

learning), and frequent pattern extraction. Predictive modeling is based upon techniques used for classification and regression modeling (Para 3 and 5). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to incorporate the method used to generate predictive models of Apté with the teachings of Gupta since Gupta teaches a data warehouse is a structure extensible environment designed for the analysis of non-volatile data (Para 2.5). In today's market, time is money. Being able to quickly and accurately analyze data gives managers the ability to make intelligent business decisions that will have a direct impact on the bottom line of the company. A data warehouse is a structure extensible environment designed for the analysis of non-volatile data, logically and physically transformed from multiple source applications to align with business structure, updated and maintained for a long period of time, expressed in simple business terms, and summarized for quick analysis (Gupta: Para 2.5). Data mining is the process by which one extracts accurate and previously unknown information form large volumes of data. This information should be in a form that can be understood, acted upon, and used for improving decision processes of the data owning entity. Data mining is a technology that encompasses a broad set of technologies, including data warehouses, database management, data analysis algorithms, and visualization (Apté: Para 2). Therefore, data summarized for quick analysis coupled with a process by which one extracts accurate and previously unknown information allows managers to quickly and accurately analyze data giving them the ability to make decisions in a timely manner.

- **[Claim 2]** selecting at least one discriminating subset of the one or more quantitative variables to create one or more statistical drivers (Apté: Para 8,

14 and 23, Apté teaches the clustering algorithms attempt to automatically partition the data space into a set of regions or clusters, to which each of the examples in the table are assigned, either deterministically, or probabilistically. For data selection, data needs to be extracted from different databases and joined, and perhaps sampled. If the data is not derived form a warehouse but from disparate databases, values may be represented using different notations in the different databases. As databases grow and are populated with more and more data, it is often necessary to partition them into collections of related records for obtaining better summaries of the apparent distinct sub-populations that are present in the data. The Examiner interprets "set of regions" and "related records" to correlate to statistical drivers.); and

- evaluating a plurality of individuals represented in the plurality of disparate databases using the one or more statistical drivers (Apté: Para 8, 14 and 23, Apté teaches the clustering algorithms attempt to automatically partition the data space into a set of regions or clusters, to which each of the examples in the table are assigned, either deterministically, or probabilistically. For data selection, data needs to be extracted from different databases and joined, and perhaps sampled. If the data is not derived form a warehouse but from disparate databases, values may be represented using different notations in the different databases. As databases grow and are populated with more and more data, it is often necessary to partition them into collections of related records for obtaining better summaries of the apparent distinct sub-populations that are present in the data. The Examiner interprets "set of regions" and "related records" to correlate to statistical drivers.).

- **[Claim 3]** creating the behavioral model by performing a cluster analysis of the plurality of individuals using data from each database of the plurality of disparate databases to form a plurality of clusters (Apté: Para 8 and 23, Apté teaches clustering is another major class of data mining algorithms. Using the same tabular data model, the algorithms attempt to automatically partition the data space into a set of regions or clusters, to which each of the examples in the table are assigned, either deterministically, or probabilistically. The goal of the search process used by these algorithms is to identify all sets of similar examples in the data, in some optimal fashion. As databases grow and are populated with more and more data, it is often necessary to partition them into collections of related records for obtaining better summaries of the apparent distinct sub-populations that are present in the data. Clustering based approaches are one of the more pervasive applications of data mining. A bank may want to segment all its retail customers to get a better feel for the demographic and psychographics breakdown. Clustering permits the bank to perform segmentation across a diverse and large set of features (or variables) that the bank has access to for all its customers. Once the clustering is performed, the analyst can examine each cluster more closely, extract

significant statistics, and used them in strengthening the bank's offerings on a more individual basis to each of the segments.);

- converting one or more clusters of the plurality of clusters into at least one supercluster (Apté: Para 9, Apté teaches one of the more popular criteria that has been used for identifying similarity has been Euclidean distance (k-means, hierarchical), based upon early research in pattern recognition. The examiner interprets the hierarchical pattern recognition refers to different levels of clustering such as superclusters.); and

- assigning the plurality of individuals to a corresponding cluster or supercluster using data from each database of the plurality of disparate databases (Apté: Para 14 and 23, Apté teaches that if the data is not derived from a warehouse but from disparate databases, values may be represented using different notations in the different databases. Many times, if a data warehouse does not already exist, this step of selection, cleaning, and transformation, may take up to 80% of a data mining analysis job for a large business data set. Clustering based approaches are one of the more pervasive applications of data mining. A bank may want to segment all its retail customers to get a better feel for the demographic and psychographics breakdown. Clustering permits the bank to perform segmentation across a diverse and large set of features (or variables) that the bank has access to for all its customers.).

- **[Claim 17]** determining a plurality of variables from each database, and converting the plurality of variables to form a plurality of statistical drivers, the plurality of statistical drivers common to each database of the plurality of disparate databases (Apté: Para 14 and 23, Apté teaches for data selection, data needs to be extracted from different databases and joined, and perhaps sampled. If the data is not derived form a warehouse but from disparate databases, values may be represented using different notations in the different databases. As databases grow and are populated with more and more data, it is often necessary to partition them into collections of related records for obtaining better summaries of the apparent distinct sub-populations that are present in the data. A bank may want to segment all its retail customers to get a better feel for the demographic and psychographics breakdown. Clustering permits the bank to perform segmentation across a diverse and large set of features (or variables) that the bank has access to for all its customers. The Examiner interprets "related records" and "features (or variables)" to correlate to statistical drivers.);

- linking the information stored in the plurality of disparate databases based upon corresponding data of the plurality of statistical drivers (Apté: Para 14, Apté teaches for data selection, data needs to be extracted from different databases and joined, and perhaps sampled. If the data is not derived form a

warehouse but from disparate databases, values may be represented using different notations in the different databases.);

- performing a first cluster analysis using the information stored in each database of the plurality of disparate databases to create a plurality of simultaneous cluster solutions across all databases of the plurality of disparate databases (Apté: Para 8 and 9, Apté teaches clustering is another major class of data mining algorithms. The algorithms attempt to automatically partition the data space into a set of regions or clusters. The goal of the search process used by these algorithms is to identify all sets of similar examples in the data, in some optimal fashion. The notions of similarity is highly subjective, and one of the more popular criteria that has been used for identifying similarity has been Euclidean distances (k-means, hierarchical).); and

- validating at least one simultaneous cluster solution of the plurality of simultaneous cluster solutions as a discriminatory behavioral model (Apté: Para 9, Apté teaches clustering results can only be judged by the value perceived by the end user. The Examiner interprets the cluster solution is validated.).

- **[Claim 18]** converting the information stored in the plurality of disparate databases according to the plurality of statistical drivers to create the corresponding data of the plurality of statistical drivers (Gupta: Para 2.3, Gupta teaches physical transformation of data homogenizes and purifies the data.).

- **[Claim 19]** each variable of the plurality of variables is not common to each database of the plurality of disparate databases (Apté: Para 14, Apté teaches if the data is not derived from a warehouse but from disparate databases, values may be represented using different notations in the different databases.).

- **[Claim 20]** selecting at least one qualitative variable from each database of the plurality of disparate databases (Gupta: Para 2.1.1, 2.2.2 and 2.3.1, Gupta teaches data warehouses are most successful when data can be combined from more than one operational system. The data warehouse may effectively combine data from multiple source applications such as sales, marketing, finance, and production. A data warehouse logical model aligns with the business structure rather that the data model of any particular application. The entities defined and maintained in the data warehouse parallel the actual business entities such as customers, products, orders, and distributors. The terms and names used in the operational system are

transformed into uniform standard business terms by the data warehouse transformation processes.); and

- transforming the at least one qualitative variable from each database to a plurality of quantitative variables, the plurality of quantitative variables common to each database of the plurality of disparate databases (Gupta: Para 2.1.1 and 2.3, Gupta teaches physical transformation includes the use of easy-to-understand business terms, and standard values for the data. Nearly all data in a typical data warehouse is built around the time dimension. The time dimension in the data warehouse also serves as a fundamental cross-reference attribute.).

- **[Claim 21]** performing a principal components analysis on the plurality of quantitative variables using the information stored in each database of the plurality of disparate databases to create the plurality of statistical drivers (Apté: Para 8, Apté teaches clustering is another major class of data mining algorithms. Using the same tabular data model, the algorithms attempt to automatically partition the data space into a set of regions or clusters, to which each of the examples in the table are assigned, either deterministically, or probabilistically. The goal of the search process used by these algorithms is to identify all sets of similar examples in the data, in some optimal fashion.).

- **[Claim 22]** standardizing the plurality of quantitative variables (Gupta: Para 2.3.2, Gupta teaches a single-physical definition of an attribute. As an attribute is defined physically for the data warehouse, it is essential to use meaningful data types and lengths.);

- transforming the standardized plurality of quantitative variables to be substantially orthogonal (Apté: Para 14, Apté teaches after the selection and cleaning processes, certain transformations may be necessary. These range from conversions from one type of data to another, to deriving new variables using mathematical or logical formulae.); and

- differentially weighting the orthogonal, standardized plurality of quantitative variables to form the plurality of statistical drivers (Apté: Para 22, Apté teaches that using frequent pattern extraction from data, link analysis, and item set analysis applications can be built.)

- **[Claim 26]** describing each cluster of a plurality of clusters of the validated simultaneous cluster solution using information stored in at least one database of the plurality of disparate databases (Apté: Para 23, Apté teaches clustering permits the bank to perform the segmentation across a diverse and large set of features (or variables) that the bank has access to for all its customers.).

- **[Claim 27]** creating a plurality of superclusters from the validated simultaneous cluster solution (Apté: Para 9, Apté teaches one of the more popular criteria that has been used for identifying similarity has been Euclidean distance (k-means, hierarchical), based upon early research in pattern recognition. The examiner interprets the hierarchical pattern recognition refers to different levels of clustering such as superclusters.).

Claims 9-11, 30-35 and 39-40 substantially recite the same limitations as that of claims 1-3, 17-22 and 26-27 with the distinction of the recited method being a system. Hence the same rejection for claims 1-3, 17-22 and 26-27 as applied above applies to claims 9-11, 30-35 and 39-40.

13. **Claims 4-8, 12-16, 24-25 and 37-38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta (Gupta, An Introduction to Data Warehousing, System Services Corporation, August 1997 [GOOGLE]) and Apté (Apté, Data Mining – An Industrial Research Perspective, IEEE Computational Science and Engineering, April-June 1997 [GOOGLE]) in view of Anderson et al. (U.S. Patent 5,974,396). As to **claim 4**, Gupta and Apté disclose a process and system for integrating information from disparate databases for purposes of predicting consumer behavior but fail to teach the at least one qualitative variable is a merchant and the one or more quantitative variable comprises one or more of the following: mean number of transactions per person for the merchant, mean amount per transaction for the merchant, mean household income of shoppers shopping at the merchant, and mean proportion of the shoppers for a particular area of the merchant. Anderson et al. teach product clusters allow a retail grocer to categorize 40,000 to 60,000 products into any smaller number of product

clusters, e.g. 15 to over 100 product clusters. In the same way, a 100,000 to over a 1,000,000 consumers are summarized into anywhere from 6 to over 100 consumer clusters. A consumer cluster report includes income: $0-25,000 (col. 11, line 41 to col. 12, line 25). The Examiner interprets a retail grocer to be a merchant. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to utilize consumer transactional information of Anderson et al. with the teachings of Gupta and Apté since Apté teach as growing body of applications is emerging that is changing the landscape of business decision support (Apté: Para 16). Maximizing return while minimizing cost is the mantra of most retail companies. Retail store chains, especially grocery chains, survive on high sales volumes and low profit margins. Accordingly retail industries are constantly searching for cost effective mechanisms to reach customers and encourage them to shop at a particular retail store (Anderson et al.: col. 1, lines 13-19). Predictive modeling techniques are best used when a large body of historical data is available, and one uses this data to model a variable of interest, so that this variable may be forecast in future scenarios. Target marketing is an example. Given a database of potential customers and how they have responded to a solicitation, develop a model of customers most likely to respond positively. The model is used for more focused new customer solicitation (Apté: Para 16 and 18). The focused approach of target marketing reduces the amount of non-productive advertising and improves the return on the advertising investment, therefore, producing a cost effective means to reach the consumer.

- **[Claim 5]** prior to forming the integrated database, weighting data of the plurality of disparate databases to adjust for differences in size and in time

encompassed (Gupta: Para 2.1.1, Gupta teaches nearly all data in a typical data warehouse is built around the time dimension. Time is the primary filtering criterion for a very large percentage of all activity against the data warehouse. Apté: Para 12, Apté teaches an association with a very high support and confidence is a pattern that occurs so often in the data that it should be obvious to the end user. Patterns with extremely low support and confidence should be regarded as outliers with no significance. The Examiner interprets the association process of Apté to be a weighting according to size.).

- **[Claim 6]** identifying one or more industries which have discriminating consumers and grouping selected merchants into the at least one discriminating subset (Anderson et al.: col. 2, lines 56-67, Anderson et al. teach providing a retailer or a retail chain with the ability to process transactional information involving large numbers of consumers and consumer products by gathering product information that uniquely identifies a specific product by type and manufacturer, grouping that product information into product clusters, and analyzing consumer retail transactions in terms of those product clusters to determine relationships between the consumer and the product.).

- **[Claim 7]** the information stored in the plurality of disparate databases further comprises consumer transactional information and has instances of purchasing behavior by consumers (Anderson et al.: col. 2, lines 56-67, Anderson et al. teach providing a retailer or a retail chain with the ability to process transactional information involving large numbers of consumers and consumer products by gathering product information that uniquely identifies a specific product by type and manufacturer, grouping that product information into product clusters, and analyzing consumer retail transactions in terms of those product clusters to determine relationships between the consumer and the product.).

- **[Claim 8]** at least one of the disparate databases includes joint account information for at least two consumers, and wherein the method further comprises: determining a consumer of the at least two consumers who generated at least a portion of the consumer transactional information (Anderson et al.: col. 10, lines 46-65, col. 12, lines 48-67 and col. 15, Anderson et al. teach a "RETAIL SHOPPER" is the consumer of the retailer. Each consumer is also associated into a household, which is tracked as a single entity, a "CARD_MEMBER" describes the card member as an individual card member within a consumer household. "HH_PURCH_HISTORY" is the household purchase history and is described as a trail of data and total amount of a consumer's household purchases. A retailer querying the database may want to determine which customers spend

the most money (1) overall, (2) per particular cluster or (3) particular time of year. More complex queries can be performed to join the accessed card numbers with the demographics of the consumer's household. Queries may also be made without knowledge of SQL commands by the retailer through the user of predefined scripts employed through menu options. The information resulting from the query can be used, for example, to target those customers with promotional and advertising material directed to products within the cluster. The Examiner interprets the more complex queries can be used to identify specific customers within a household to target with promotional information, and a household purchase history means joint account information for at least two consumers and the card member serves as the means to identify which consumer consummated which transactions.).

- **[Claim 24]** at least one database of the plurality of disparate databases stores behavioral and attitudinal information and wherein at least one database of the plurality of disparate databases stores consumer transactional information (Anderson et al.: col. 3, lines 9-19, Anderson et al. teach receiving consumer information describing demographic characteristics of various consumers, grouping consumers into consumer clusters based on specifically defined demographics criteria, and analyzing product transactions in terms of those consumer clusters to determine relationships between consumers and products.).

- **[Claim 25]** at least one database of the plurality of disparate databases stores behavioral and attitudinal information and wherein at least one database of the plurality of disparate databases stores media consumption information (Anderson et al.: col. 3, lines 9-19, Anderson et al. teach receiving consumer information describing demographic characteristics of various consumers, grouping consumers into consumer clusters based on specifically defined demographics criteria, and analyzing product transactions in terms of those consumer clusters to determine relationships between consumers and products. Apté: Para 26, Apté teaches that just as sales and bank data could be mined to help the retail store or bank to improve its product offerings and marketing effectiveness, internet traffic on a web site can be analyzed to better understand where the real demand is, what pages are being looked at collectively, etc. and this information can be used by the service provider to better organize the site's web pages.).

Claims 12-16 and 37-38 substantially recite the same limitations as that of claims 4-8 and 24-25 with the distinction of the recited method being a system. Hence the same rejection for claims 4-8 and 24-25 as applied above applies to claims 12-16 and 37-38.

14. **Claims 23, 28-29, 36 and 41-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta (Gupta, An Introduction to Data Warehousing, System Services Corporation, August 1997 [GOOGLE]) and Apté (Apté, Data Mining – An Industrial Research Perspective, IEEE Computational Science and Engineering, April-June 1997 [GOOGLE]) and Anderson et al. (U.S. Patent 5,974,396) in view of claim 17. **Claim 23, 28 and 29** recite the limitation of evaluating corresponding discrimination power of the plurality of statistical drivers using a second cluster analysis, determining whether the at least one simultaneous cluster solution provides corresponding discrimination on a plurality of other variables which are not statistical drivers in the plurality of disparate databases, and determining whether the at least one simultaneous cluster solution provides corresponding discrimination separately within each database of the plurality of disparate databases. The Examiner takes Official Notice that the limitations of claims 23, 28 and 29 are well known in the art as indicated by the applicant in the specification (pp. 15-16). The applicant identified "using conventional statistical software as would be well known in the art. For example, the "FACTCLUS" procedure of the "SAS" statistical software can be utilized for this procedure". As such, the Examiner has interpreted the admitted prior art of: "the "FACTCLUS" procedure of the "SAS" statistical software can be utilized for this procedure", as admitting the limitations of claims 23, 28 and 29 are well known in the art since specific software was identified that can perform the procedure.

Claims 36 and 41-42 substantially recite the same limitations as that of claims 23 and 28-29 with the distinction of the recited method being a system. Hence the same rejection for claims 23 and 28-29 as applied above applies to claims 36 and 41-42.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Chaudhuri et al. (Chaudhuri et al., An Overview of Data Warehousing and OLAP Technology, SIGMOD Record, Vol. 26, No. 1, 1997, pp. 65-74 [GOOGLE]) disclose decision support usually requires consolidating data from many heterogeneous sources. Data warehouse architecture is identified.
- Fayyad et al. (U.S. Patent 6,263,337) disclose a scalable system for expectation maximization clustering of large databases.
- Fayyad et al. (U.S. Patent 6,263,334) disclose density-based indexing method for efficient execution of high dimensional nearest-neighbor queries on large databases.
- Farley et al. (Farley et al., Empirical Marketing Generalization Using Meta-Analysis, Marketing Science, Vol. 14, No. 3, Part 2 of 2, 1995, PP. G36-G46, [JSTOR]) disclose an efficient way to combine and assess parameter

estimates made under different circumstances, and to predict parameter values, which should occur under yet un-researched circumstances.

- Malloy et al. (U.S. Patent 5,905,985) disclose relational database modifications based on multi-dimensional database modifications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Heck whose telephone number is (571) 272-6730. The examiner can normally be reached Monday thru Friday between the hours of 8:00am - 4:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq R. Hafiz can be reached on (571) 272-6729. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-6584.

Any response to this action should be mailed to:

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(571) 273-6730	[Informal/Draft communication, labeled "**PROPOSED**" or "**DRAFT**"]

mch
12 April 2005

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